

SEQ ID NO: 4	MGSWVQLITSVGVQQNHPGWTVAGQFQEKRRFTEEVIEYFQKKVSPVHLK
SEQ ID NO: 17	MGSWVQLITSVGVQQNHPGWTVAGQFQEKRRFTEEVIEYFQKKVSPVHLK
gi12408272	MGSWVQLITSVGVQQNHPGWTVAGQFQEKRRFTEEVIEYFQKKVSPVHLK
Y35897	-----
SEQ ID NO: 4	ILLTSDA WKFRVRAELPREEADALYEALKNLTPYVAIEDKDMQKQEQQ
SEQ ID NO: 17	ILLTSDA WKFRVRAELPREEADALYEALKNLTPYVAIEDKDMQKQEQQ
gi12408272	ILLTSDA WKFRVRAELPREEADALYEALKNLTPYVAIEDKDMQKQEQQ
Y35897	-----MQKQEQQ

SEQ ID NO: 4	FREWFLKEFPQIRWKIQESIERLRVIANEIEKVRHGCVCIANVVSGTGIL
SEQ ID NO: 17	FREWFLKEFPQIRWKIQESIERLRVIANEIEKVRHGCVCIANVVSGTGIL
gi12408272	FREWFLKEFPQIRWKIQESIERLRVIANEIEKVRHGCVCIANVVSGTGIL
Y35897	FREWFLKEFPQIRWKIQESIERLRVIANEIEKVRHGCVCIANVVSGTGIL

SEQ ID NO: 4	SVIGVMLAPFTAGLSLSTITAAGVGLGIASATAGIASSIVENTYTRSAELT
SEQ ID NO: 17	SVIGVMLAPFTAGLSLSTITAAGVGLGIASATAGIASSIVENTYTRSAELT
gi12408272	SVIGVMLAPFTAGLSLSTITAAGVGLGIASATAGIASSIVENTYTRSAELT
Y35897	SVIGVMLAPFTAGLSLSTITAAGVGLGIASATAGIASSIVENTYTRSAELT

SEQ ID NO: 4	ASRLTATSTDQLEALRDILHDI TPNVLSFALDFDEATKMIANDVHTLRRS
SEQ ID NO: 17	ASRLTATSTDQLEALRDILHDI TPNVLSFALDFDEATKMIANDVHTLRRS
gi12408272	ASRLTATSTDQLEALRDILHDI TPNVLSFALDFDEATKMIANDVHTLRRS
Y35897	ASRLTATSTDQLEALRDILHDI TPNVLSFALDFDEATKMIANDVHTLRRS

FIG. 1A

SEQ ID NO: 4

SEQ ID NO: 17

gi12408272

Y35897

KATVGRPLIAWRYVPINVVETLRLTRGAPTRIVRKVARNLGKATSGVLVVL
KATVGRPLIAWRYVPINVVETLRLTRGAPTRIVRKVARNLGKATSGVLVVL
KATVGRPLIAWRYVPINVVETLRLTRGAPTRIVRKVARNLGKATSGVLVVL
KATVGRPLIAWRYVPINVVETLRLTRGAPTRIVRKVARNLGKATSGVLVVL

SEQ ID NO: 4

SEQ ID NO: 17

gi12408272

Y35897

DVNVLVQDSLDLHKGAKSESAE-----
DVNVLVQDSLDLHKGAKSESAESLRQWAQEELENINELTHIHQSLKAG
DVNVLVQDSLDLHKGAKSESAESLRQWAQEELENINELTHIHQSLKAG
DVNVLVQDSLDLHKGAKSESAELLRQWAQEELENINELTHIHQSLKAG

FIG. 1B

gi1304189

gi571466

SEQ ID NO: 8

SEQ ID NO: 19

gi1304189

gi571466

SEQ ID NO: 8

SEQ ID NO: 19

gi1304189

gi571466

SEQ ID NO: 8

SEQ ID NO: 19

gi1304189

gi571466

SEQ ID NO: 8

SEQ ID NO: 19

gi1304189

gi571466

SEQ ID NO: 8

SEQ ID NO: 19

MASQIQKLLTTNQDLLLLMQKGTMMRKVRTKSWKKLRYFRLQDDGMTVWHG
MASQIQKLLTTNQDLLLLMQKGTMMRKVRTKSWKKLRYFRLQDDGMTVWHG
MASLLQDQLTTDQDLLLLMQEGMPMRKVRKSWKKLRYFRLQNDGMTVWHA
MASLLQDQLTTDQDLLLLMQEGMPMRKVRKSWKKLRYFRLQNDGMTVWHA
*** :*. ***:*****:* *****:*****:*****:*****.

RHLESISKPTFSISDVERIRKQDSELLRRLVVEEFPLEQGFTIVFNGRRP
RHLESISKPTFSISDVERIRKQDSELLRRLVVEEFPLEQGFTIVFNGRRP
RQARGSAKPSFSISDVETIRNGHDSSELLRSLAEELPLEQGFTIVFHGRRS
RQARGSAKPSFSISDVETIRNGHDSSELLRSLAEELPLEQGFTIVFHGRRS
*: .. **:***** **:* ***** *.*:*****:***.

NLDLVANSVEEAQTWMRGLQLLLVDLVARMNYQEQLDQMLREWFQQADRNQ
NLDLVANSVEEAQTWMRGLQLLLVDLVARMNYQEQLDQMLREWFQQADRNQ
NLDLMANSVEEAQIWMRGLQLLLVDLVTSMHQERLDQWLSDFQRGDKNQ
NLDLMANSVEEAQIWMRGLQLLLVDLVTSMHQERLDQWLSDFQRGDKNQ
****:***** *****:*****: *::*** * :***:.*:***

DSRMSFREARLLLLLMNVEMDEEYAFSLFQEADVVSQSNITLDSEEFVQFYK
DSRMSFREARLLLLLMNVEMDEEYAFSLFQEADVVSQSNITLDSEEFVQFYK
DGKMSFQEVQVQRLHLNMVEMDQEYAFSLFQAADTSQSGTLEGEFVQFYK
DGKMSFQEVQVQRLHLNMVEMDQEYAFSLFQAADTSQSGTLEGEFVQFYK
*.:***:*. ***** *****:***** **.*.***:*****

ALTKRTEIEELFENFSSDKQKLTLLFFVDFLREEQKESDSSDLALKLID
ALTKRTEIEELFENFSSDKQKLTLLFFVDFLREEQKESDSSDLALKLID
ALTKRAEVQELFESFSADGQKLTLLFFLDLFLQEEQKERDCTSELALELID
ALTKRAEVQELFESFSADGQKLTLLFFLDLFLQEEQKERDCTSELALELID
*****:*.:*****.*: *****:*****:***** * :*:***:***

FIG. 2A

gi1304189 gi571466
SEQ ID NO: 8
SEQ ID NO: 19

gi1304189 CPDLSALVVYLRTAPFCSTHSHKENYHIYDISSFSESKAKNLIREAGNEF
gi571466 CPDLSALVVYLRTAPFCSTHSHKENYHIYDISSFSESKAKNLIREAGNEF
SEQ ID NO: 8 CPALSSSLVIYLKSVSFRSFTSHSKEHYHFYEISSETKAKRLIKEAGNEF
SEQ ID NO: 19 -----

gi1304189 VQHNARQLCRVYPSGLRTDSSNYPQEHWNVGCQMVAMNMQTAGSAMDIC
gi571466 VQHNARQLCRVYPSGLRTDSSNYPQEHWNVGCQMVAMNMQTAGSAMDIC
SEQ ID NO: 8 VQHNTQLSRVYPSGLRTGSSIYNPQGY-----
SEQ ID NO: 19 -----

gi1304189 DGLFRQNGSGYVLKPEFLRDTQSSFNPMKPVSLYKAQILVVQVISGQRL
gi571466 DGLFRQNGSGYVLKPEFLRDTQSSFNPMKPVSLYKAQILVVQVISGQRL
SEQ ID NO: 8 -----
SEQ ID NO: 19 -----

gi1304189 PKVDKTKETTVDPLVRVELYGVPEDTKQQETSYVENNGINPYWGETFYF
gi571466 PKVDKTKETTVDPLVRVELYGVPEDTKQQETSYVENNGINPYWGETFYF
SEQ ID NO: 8 -----
SEQ ID NO: 19 -----

gi1304189 QIQVPELAMLRVVKDYSRTSRNNFIGQYTLPWTCMKHGYRHVSLLSKDG
gi571466 QIQVPELAMLRVVKDYSRTSRNNFIGQYTLPWTCMKHGYRHVSLLSKDG
SEQ ID NO: 8 -----
SEQ ID NO: 19 -----

FIG. 2C

gi1304189

gi1571466

SEQ ID NO: 8

SEQ ID NO: 19

TSLHPASHFVYTCMQEDLDMDPEP

TSLHPASIFVYTCMQEDLDMDPEP

FIG. 2D

TNLIYHKNIPEWAHVDFIWGLDAPHRMYNEI IHLMQEETNLSQGRCEAVL
TNLVFHESIPEWEHLDFIWGLDAPWRLYNKI INLMRYQ-----
PNLIYHKEIPFYNHLDFIWAMDAPQEYNDIVSMISEDKK-----
.***:.*** : *:*****.:***.*** : : : :

1. *Introduction*

SEQ ID NO: 27
Y05317
gi7110216
SEQ ID NO: 23
SEQ ID NO: 25
SEQ ID NO: 11

---MQAKYSSTRDMLDDDDGDTTMSLSQASATTRHPEPRR-----
---MQAKYSSTRDMLDDDDGDTTMSLSQASATTRHPEPRRTEHRAPSSSTWRPVALTLLTL
---MQAKYSSTRDMLDDDDGDTTMSLSQASATTRHPEPRRTEHRAPSSSTWRPVALTLLTL
---MQAKYSSTRDMLDDDDGDTTMSLSQASATTRHPEPRRTEHRAPSSSTWRPVALTLLTL
---MQAKYSSTRDMLDDDDGDTTMSLSQASATTRHPEPRRTEHRAPSSSTWRPVALTLLTL
---MSLSQASATTRHPEPRRTEHRAPSSSTWRPVALTLLTL

SEQ ID NO: 27
Y05317
gi7110216
SEQ ID NO: 23
SEQ ID NO: 25
SEQ ID NO: 11

-----TVFYQYQLSNTGQDTISQMEERLGNTSQELQSLQVQNIKLAGSLQHV
CLVLLIGLAAALGLLFFQYQYQLSNTGQDTISQMEERLGNTSQELQSLQVQNIKLAGSLQHV
CLVLLIGLAAWGLLFFQYQYQLSNTGQDTISQMEERLGNTSQELQSLQVQNIKLAGSLQHV
CLVLLIGLAAALGLLFFQYQYQLSNTGQDTISQMEERLGNTSQELQSLQVQNIKLAGSLQHV
CLVLLIGLAAALGLLFFQYQYQLSNTGQDTISQMEERLGNTSQELQSLQVQNIKLAGSLQHV
CLVLLIGLAAALGLLFFQYQYQLSNTGQDTISQMEERLGNTSQELQSLQVQNIKLAGSLQHV

SEQ ID NO: 27
Y05317
gi7110216
SEQ ID NO: 23
SEQ ID NO: 25
SEQ ID NO: 11

AEKLCRELYNKAG-----AHCSPCTEQWKWHGDNICYQ
AEKLCRELYNKAG-----AHCSPCTEQWKWHGDNICYQ
AEKLCRELYNKAG-----AHCSPCTEQWKWHGDNICYQ
AEKLCRELYNKAG-----AHCSPCTEQWKWHGDNICYQ
AEKLCRELYNKAGGYTRNMVPAASSESRLQLPHMGESAAAHRCSPCTEQWKWHGDNICYQ
AEKLCRELYNKAGGYTRNMVPAASSESRLQLPHMGESAAAHRCSPCTEQWKWHGDNICYQ

SEQ ID NO: 27
Y05317
gi7110216
SEQ ID NO: 23
SEQ ID NO: 25
SEQ ID NO: 11

FYKDSKSWEDCKYFCLSENSTMLKINKQEDLEFAASQSYSEFFYSYWTGLLRPDGKAWL
FYKDSKSWEDCKYFCLSENSTMLKINKQEDLEFAASQSYSEFFYSYWTGLLRPDGKAWL
FYKDSKSWEDCKYFCLSENSTMLKINKQEDLEFAASQSYSEFFYSYWTGLLRPDGKAWL
FYKDSKSWEDCKYFCLSENSTMLKINKQEDLEFAASQSYSEFFYSYWTGLLRPDGKAWL
FYKDSKSWEDCKYFCLSENSTMLKINKQEDLEFAASQSYSEFFYSYWTGLLRPDGKAWL
FYKDSKSWEDCKYFCLSENSTMLKINKQEDLEFAASQSYSEFFYSYWTGLLRPDGKAWL

FIG. 4A

[illegible]

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

[illegible]

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

TNDGHRKTTINVARLEKASQSRKTLLEGEMSHPRGIVVDPLNGWMYTWDWEEDEIDDSVGR
TNDGHRKTTINVARLEKASQSRKTLLEGEMSHPRGIVVDPLNGWMYTWDWEEDEIDDSVGR
TDDGPKTTISVARLEKAAQTRKTLIEGKMTHPRAIVVDPLNGWMYTWDWEEDEPKDSRRGR

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

IEKAWMDGFNRQIFVTSK-MLWPNGLTLDFTNTLYWCDAAYDHIIEKVFLNGTHRKI VVS
IEKAWMDGFNRQIFVTSK-MLWPNGLTLDFTNTLYWCDAAYDHIIEKVFLNGTHRKI VVS
LERAWMDGSHRDI FVTSKTVLWPNGLSLDIPAGRLLYWVDAFYDRIETILLNGTDRKI VVE

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

GRELNHPFGLSHHGNYVFWTDYMNCSIQDLTLTS---EVTLLRHERPPLFGLQIYDPR
GRELNHPFGLSHHGNYVFWTDYMNCSIQDLTLTS---EVTLLRHERPPLFGLQIYDPR
GPENLHAFGLCHHGNYLFWTEYRSGSVYRLERGVGGAPPTVTLRSERPPIFEIRMYDAQ

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

QOQ-GDNMCRVNNGGCSSLCLATPGRVQCAEDQVLDADGVTCLANPSVVPQQCPGE
QOQ-GDNMCRVNNGGCSSLCLATPGRVQCADNQLLDENGTTCTFNPGALPHICKAGE
QOQ-GDNMCRVNNGGCSSLCLATPGRVQCADNQLLDENGTTCTFNPGALPHICKAGE
QOQ-GDNMCRVNNGGCSSLCLATPGRVQCADNQLLDENGTTCTFNPGALPHICKAGE

FIG. 5C

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

FRCKNRHICIQARWKCDGDDCLDGSDEDSVNCFNHSCPDQFKCQNNRCIPKRWLCDGAN
FRCKNRHICIQARWKCDGDDCLDGSDEDSVNCFNHSCPDQFKCQNNRCIPKRWLCDGAN
FACANSRRCIQRWKCDGDNDCLDNDSEAPALCHQHTCPSDRFKCENNRCIPNRWLCDGDN

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

DCGSNEDESNOTCTARTCQVDQFSCNGRRCIPRAWLCDREDDCGDQTDEMASCEFFPTCEP
DCGSNEDESNOTCTARTCQVDQFSCNGRRCIPRAWLCDREDDCGDQTDEMASCEFFPTCEP
DCGSNEDESNOTCTARTCQVDQFSCNGRRCIPRAWLCDREDDCGDQTDEMASCEFFPTCEP

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

LTQFVCKSGRRCISSKWHCDSDDDCGDGSDEVGVHSCFDNQFRCSSGRCIPGHWACDGDN
LTQFVCKSGRRCISSKWHCDSDDDCGDGSDEVGVHSCFDNQFRCSSGRCIPGHWACDGDN
LTQFTCNNGRRCININWRCDNDNDCCGDNDEAGCSHSCSSTQFKCNSGRCIPEHWTCDGDN

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

DCGDFSDEAQINCTKEEIHSPAGCNGNEFQCHPDGNCVVDLWRCDEKDCEDGSDEKGCN
DCGDFSDEAQINCTKEEIHSPAGCNGNEFQCHPDGNCVVDLWRCDEKDCEDGSDEKGCN
DCGDYSDETHANCTNQATRPFGGCHTDEFQCRLDGLCIPLRWRCDGDTDCMDSSDEKSCE

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

GTIRLCDHKTKFSCWSTGRRCINKAWVCDGIDCEDQSDDEDDCDSFLCGPPKHPCANDTSV
GTIRLCDHKTKFSCWSTGRRCINKAWVCDGIDCEDQSDDEDDCDSFLCGPPKHPCANDTSV
GVTHVCDPSVKFGCKDSARCISKAWVCDGDNDCEDNDSDENCESLACRPPSHPCANNTSV

FIG. 5D

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

CLQPEKLCNGKKDCPDGSDGEGYLCDECSLNNGGCSNHCSSVVPGRGIVCSCPEGLQLNKDN
CLQPEKLCNGKKDCPDGSDGEGYLCDECSLNNGGCSNHCSSVVPGRGIVCSCPEGLQLNKDN
CLPPDKLCDGNDCCGSDGDEGELCDQCSLNNGGCSNHCSSVAPGEGIVCSCPLGMELGPDN

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

KTCEIVDYCSNHLKCSQVCEQHKHTVKCSCYEGWKLDVDGESCTSDVPFEAFIIFSIRHE
KTCEIVDYCSNHLKCSQVCEQHKHTVKCSCYEGWKLDVDGESCTSDVPFEAFIIFSIRHE
HTCQIQSYCAKHLKCSQKCDQNKFSVKCSCYEGWVLEPDGESCRSLDPFKPFIIFSIRHE

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

IRRIDLHKRDYSLVLPGLRNTIALDFHFNQSLLYWTDVVEDRIYRGKLSGGSVAIEVV
IRRIDLHKRDYSLVLPGLRNTIALDFHFNQSLLYWTDVVEDRIYRGKLSGGSVAIEVV
IRRIDLHKGDYSLVLPGLRNTIALDFHLSQSAIYWTDVVEDKIYRGKLLDNGALTSFEVV

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

VEHGLATPEGLTVDWIAGNIYWIDSNLDQIEVAKLDGSLRRTTLIAGAMEHPRAIALDPY
VEHGLATPEGLTVDWIAGNIYWIDSNLDQIEVAKLDGSLRRTTLIAGAMEHPRAIALDPY
IQYGLATPEGLAVDWIAGNIYWVESNLDQIEVAKLDGTLRRTTLIAGDIEHPRAIALDPRD

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

GILFWTDWDANFPRIEASMSGAGRKTIIYKDMKTGAWPNGLTVDHFEKRIVWTDARSDAI
GILFWTDWDANFPRIEASMSGAGRKTIIYKDMKTGAWPNGLTVDHFEKRIVWTDARSDAI
GILFWTDWDASLPRIEAAASMSGAGRRTVHRETSGGWPNGLTVDYLEKRILWIDARSDAI

FIG. 5E

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

YSALYDGTNMIEIIRGHEYL SHPFAVSLYGSEVYWTDRNTLSKANKWTGQNVSVIQKT
YSALYDGTNMIEIIRGHEYL SHPFAVSLYGSEVYWTDRNTLSKANKWTGQNVSVIQKT
YSARYDGS GHMEVLRGHEFL SHPFAVTLYGGEVYWTDRNTLAKANKWTGHNVTVVQRT

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

SAQPFDLQIYHPSRQPQAPNPCAANDGKGPCSHMCLINHNRSAAACACPHLMKLSDDKKTC
SAQPFDLQIYHPSRQPQAPNPCAANDGKGPCSHMCLINHNRSAAACACPHLMKLSDDKKTC
NTQPFDLQVYHPSRQPMAPNPCEANGGQGPCSHLCLINYNRTVSCACPHLMKLHKDNTTC

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

YEMKKFLLYARRSEIRGV D IDNPYFNFI T AFTVPDIDDVTVIDFDASEERLYWTDIKTQT
YEMKKFLLYARRSEIRGV D IDNPYFNFI T AFTVPDIDDVTVIDFDASEERLYWTDIKTQT
YEFKKFLLYARQMEIRGV D LDAPYNYII SFTVPDIDNVTVDYDAREQRVYWSDVRTQA

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

IKRAFINGTGLETVISRDIQSI RGLAVDWVSRNLYWISSEFDE TQINVARLDGSLKTSII
IKRAFINGTGLETVISRDIQSI RGLAVDWVSRNLYWISSEFDE TQINVARLDGSLKTSII
IKRAFINGTGLETVISADLPNAHGLAVDWVSRNLFWTSYDYNKKQINVARLDG SFKNNAV

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

HGIDKPQCLAAHPVRGKLYWTDGNTINMANMDGNSKILFQNKQEPVGLSIDYVENKLYW
HGIDKPQCLAAHPVRGKLYWTDGNTINMANMDGNSKILFQNKQEPVGLSIDYVENKLYW
QGLEQPHGLVVHPLRGKLYWTDGDNISMANMDGNSR TLLFSGQKGPVGLAIDFPESKLYW

FIG. 5F

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

ISSNGTINRCNLDGNGLEVIESMKEELTKATALTIMDKKLWWADQNLAQLGTC SKRDGR
ISSNGTINRCNLDGNGLEVIESMKEELTKATALTIMDKKLWWADQNLAQLGTC SKRDGR
ISSGNHTINRCNLDGSGLEVIDAMRSQLGKATALAIMGDKLWWADQVSEKMGTC SKADGS

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

NPTILRNKTSVVHMKVYDKEAQ---QGSNSCQLNNGGCSQLCLPTSETTRTCMCTVGYY
NPTILRNKTSVVHMKVYDKEAQ---QGSNSCQLNNGGCSQLCLPTSETTRTCMCTVGYY
GSVVLNRNSTLVMHMKVYDESIQLDHKGTNPCSVNNGDCSQLCLPTSETTRSCMCTAGYS

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

LQKNRMSQCQIESFLMYSVHEGIRGIPLEPSDKMDALMPISGTSFAVGIDFHAENDTIYW
LQKNRMSQCQIESFLMYSVHEGIRGIPLEPSDKMDALMPISGTSFAVGIDFHAENDTIYW
LRSGQACEGVGSFLLYSVHEGIRGIPLDPNDKSDALVPVSGTSLAVGIDFHAENDTIYW

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

TDMGFNKISRAKRDQTWKEDIITNGLGRVEGIAVDWIAGNIYWTDHGFNLIEVARLNGSF
TDMGFNKISRAKRDQTWKEDIITNGLGRVEGIAVDWIAGNIYWTDHGFNLIEVARLNGSF
VDMGLSTISRAKRDQTWREDVVTNGIGRVEGIAVDWIAGNIYWTDQGFVDIEVARLNGSF

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

RYVVISQGLDQPRSI AVHPEKGLLFWTEWGQMPICIGKARLDGSEKVVLVSMGI AWPNGIS
RYVVISQGLDQPRSI AVHPEKGLLFWTEWGQMPICIGKARLDGSEKVVLVSMGI AWPNGIS
RYVVISQGLDKPRAITVHPEKGYLFWTEWGQYPRIERSRLDGTERRVVLNVVSI SWPNGIS

FIG. 5G

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

IDYEENKLYWCDARTDKIERIDLETGGENREMLVLSGSNVDMFSAVFGAYIYWSDRAHANG
IDYEENKLYWCDARTDKIERIDLETGGENREMLVLSGSNVDMFSAVFGAYIYWSDRAHANG
VDYQDGKLYWCDARTDKIERIDLETGGENREVVLSSNNMDMFSVSVFEDFIYWSDRTHANG

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

SVRRGHKNDATETITMRTGLGVNLKEVKIFNRVREKGTNVCARDNGGCKQLCLYRGNNSRR
SVRRGHKNDATETITMRTGLGVNLKEVKIFNRVREKGTNVCARDNGGCKQLCLYRGNNSRR
SIKRGSKDNATDSVPLRTGIGVQLKDIKVFNRDRQKGTNVCAVANGGCCQLCLYRGRGQR

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

TCACAHGYLAEDGVTCLRHGELLVSGRTILKSIHLSDETNLNSPIRYPENPRYFKNVIA
TCACAHGYLAEDGVTCLRHGELLVSGRTILKSIHLSDETNLNSPIRYPENPRYFKNVIA
ACACAHGMLAEDGASCREYAGYLLYSERTILKSIHLSDERNLNAPVQPFEDPEHMKNVIA

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

LAFDYNQRRKG--TNRIFYSDAHFGNIQLIKDNWEDRQVIVENVGSVEGLAYHRAWDTLY
LAFDYNQRRKG--TNRIFYSDAHFGNIQLIKDNWEDRQVIVENVGSVEGLAYHRAWDTLY
LAFDYRAGTSPGTPNRIFFSDIHFNGNIQQINDDGSRRITIVENVGSVEGLAYHRGWDTLY

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

WTSSTTSSITRHTVDQTRPGAFDREAVITMSEDDHPPHVLALDECQNLMFWTNWNEQHPSI
WTSSTTSSITRHTVDQTRPGAFDREAVITMSEDDHPPHVLALDECQNLMFWTNWNEQHPSI
WTSYTTSTITRHTVDQTRPGAFERETVITMSGDDHPRAFVLDECQNLMFWTNWNEQHPSI

FIG. 5H

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

MRSTLTGKNAQVVVSTDILTTPNGLTIDYRAEKLYFSDGLGKIERCEYDGSQRHVIVKSG
MRSTLTGKNAQVVVSTDILTTPNGLTIDYRAEKLYFSDGLGKIERCEYDGSQRHVIVKSG
MRAALSGANVLTLEKDIRTPNGLAIDHRAEKLYFSDATLTKIERCEYDGSHRYYVILKSE

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

PGTFLSLAVYDNYIFWSDWGRRAILRSNKYTGDTKILRSDIPHQPMGIIAVANDTNSCE
PGTFLSLAVYDNYIFWSDWGRRAILRSNKYTGDTKILRSDIPHQPMGIIAVANDTNSCE
PVHPFGLAVYGEHIFWTDWVRRVQRANKHVGSNMKLLRVDIPQQPMGIIAVANDTNSCE

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

LSPCALLNGGCHDLCLLTPNGRVNCSRGDRILLEDRNRCVTKNSSCNAYSEFECNGECI
LSPCALLNGGCHDLCLLTPNGRVNCSRGDRILLEDRNRCVTKNSSCNAYSEFECNGECI
LSPCRINNNGGCQDLCLLTHQHVNCSRGGRILQDDLTTCRAVNSSCRAQDEFECANGECI

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

DYQLTCDGIPHCKDKSDEKLLYCNRSRRGFKPCYNRRCIPHGKLCDEGDCGDNDEL
DYQLTCDGIPHCKDKSDEKLLYCNRSRRGFKPCYNRRCIPHGKLCDEGDCGDNDEL
NFSLTCDGVPHCKDKSDEKPSYCNRRCKKTFRQCSNRCVSNMLWCNGADDCGDSDEI

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

DCKVSTCATVEFRCADGTCTIPRSARCNQNICADASDEKNCNNTDCTHFYKLGVKTTGFI
DCKVSTCATVEFRCADGTCTIPRSARCNQNICADASDEKNCNNTDCTHFYKLGVKTTGFI
PCNKTAGVGEFRCDGTCTIGNSSRCNQFVDCEDASDEMNCSATDCSSYFRLGVKGVLFQ

FIG. 5I

SECRET

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

RCNSTSLCVLPTWI CDGSND CGDYSD ELKCPVQNKHKKEENYFSCPSGRCI LNTWICDGQ
RCNSTSLCVLPTWI CDGSND CGDYSD ELKCPVQNKHKKEENYFSCPSGRCI LNTWICDGQ
PCERTSLCYAPSWVCDGAND CGDYSD ERDCPGVKRPRCPLNYFACPSGRCI PMSWTCDKE

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

KDCEDGRDEFHCDSSCSWNQFACSAQKCI SKHWICDGEDDCGDLDES DSI CGAITCAAD
KDCEDGRDEFHCDSSCSWNQFACSAQKCI SKHWICDGEDDCGDLDES DSI CGAITCAAD
DDCEHGEDETHCNKFCSEAQFECQNHRCISKQWLCDSGDDCGDGSDE -AAHCEGKTCGPS

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

MFSCQGSRA CVPRHWL CDGERDCPDGSD ELSTAGCAPNNTCDENAFMCHNKVCIPKQFVC
MFSCQGSRA CVPRHWL CDGERDCPDGSD ELSTAGCAPNNTCDENAFMCHNKVCIPKQFVC
SFSCPGTHVCVPERWL CDGDKDCADGADESIAAGCLYNSTCDDREFM CQNRQCI PKHFVC

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

DHDDDCGDSDESPQCGYRQCGTEEFSCADGRCLLNTQWQCDGDFDCPDHSDEAPLNPKC
DHDDDCGDSDESPQCGYRQCGTEEFSCADGRCLLNTQWQCDGDFDCPDHSDEAPLNPKC
DHDRDCADGSD ESPECEYPTCGPSEFR CANGRCLSSRQWECDGENDCHDQSD EAPKNPHC

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

KSAEQSCN -SSFFMCKNGRCIPSGGLCDNKDDCGDGS DERNCHINECLSKKVS GCSQDCQ
KSAEQSCN -SSFFMCKNGRCIPSGGLCDNKDDCGDGS DERNCHINECLSKKVS GCSQDCQ
TSPEHKCNASSQFLCSSGRCAEALLCNGQDDCGDSS DERNCHINECLSRKLSGCSQDCE

FIG. 5J

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

DLPVSYKCKWPGFQLKDDGKTCVDIDECSSGFFPCSQQCINTYGYKCLCTDGYEIQPDN
DLPVSYKCKWPGFQLKDDGKTCVDIDECSSGFFPCSQQCINTYGYKCLCTDGYEIQPDN
DLKIGFKCRCRPGFRLKDDGRTCADVDECSTTFPCSQRCINTHGSYKCLCVEGYAPRGG

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

PNGCKSLDEEPFLILADHHEIRKISTDGSNYTLLKQGLNNVIAIDFDYREEFIYWIDSS
PNGCKSLDEEPFLILADHHEIRKISTDGSNYTLLKQGLNNVIAIDFDYREEFIYWIDSS
PHSCKAVTDEEPFLIFANRYLRKLNLDGSNYTLLKQGLNNAVALDFDYREQMIYWTDVT

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

RPNGSRINRMCLNGSDIKVVHNTAVPN--ALAVDWIGKNLYWSDTEKRIIEVSKLNGLYP
RPNGSRINRMCLNGSDIKVVHNTAVPN--ALAVDWIGKNLYWSDTEKRIIEVSKLNGLYP
T-QGSMIRRMHLNGSNVQVLHRTGLSNPDGLAVDWVGGNLYWCDKGRDTIEVSKLNGAYR

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

TILVSKRLKFPRDLSLDPQAGLYWIDCCEYPHIGRVGMDGTNQSVVIETKISRPMALTI
TILVSKRLKFPRDLSLDPQAGLYWIDCCEYPHIGRVGMDGTNQSVVIETKISRPMALTI
TVLVSSGLREPRALVVDVQNGLYWTDWGDHSLIGRIGMDGSSRSVIVDTKITWPNGLTTL

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

DYVNRRLYWAD--ENHIEFSNMDGSHRHKVPNQDIPGVIALTLFEDIYWTDGKTKSLSR
DYVNRRLYWAD--ENHIEFSNMDGSHRHKVPNQDIPGVIALTLFEDIYWTDGKTKSLSR
DYVTERIYWADAREDYIEFASLDGSNRHVLSQDIPHIFALTLEFEDYVYVWTDWETKSINR

FIG. 5K

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

AHKTSADRLSLIYSWHAITDIQVYHSYRQPDVSKHLCMINNGGCSHLCLLAPGKTHTCA
AHKTSADRLSLIYSWHAITDIQVYHSYRQPDVSKHLCMINNGGCSHLCLLAPGKTHTCA
AHKTTGTNKTLLISTLHRPMDLHVHFALRQPDVPHPCVKVNNGGCSNLCLLSPGGGHKCA

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

CPTNFYLAADNRTCLSNCTASQFRCKTDKCIFFWWKCDTVDDCGDGSDEPDDCPEFRCQP
CPTNFYLAADNRTCLSNCTASQFRCKTDKCIFFWWKCDTVDDCGDGSDEPDDCPEFRCQP
CPTNFYLGSDGRTCVSNCTASQFVCKNDKCIFFWWKCDTEDDCGDHSDPEPDDCPEFKCRP

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

GRFQCGTGLCALPAFICDGENDCGNSDELNCDTHVCLSGQFKCTKNQKCI PVNLRNCGQ
GRFQCGTGLCALPAFICDGENDCGNSDELNCDTHVCLSGQFKCTKNQKCI PVNLRNCGQ
GQFQCGSTGICTNPAFICDGDNDCCQNSDEANCDIHVCLPSQFKCTNTNRCIPGIFRCNGQ

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

DDCGDEEDERDCPENSCSPDYFQCKTTKHCI SKLWVCDEDPDCADASDE -ANCDKKT CGP
DDCGDEEDERDCPENSCSPDYFQCKTTKHCI SKLWVCDEDPDCADASDE -ANCDKKT CGP
DNCGDGEDERDCPEVTCAPNQFQCSITKRCI PRVWVCDRDNDCVDGSDEPANCTQMT CGV

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

HEFQCKNNN-CIPDHWRCDSQNDSDNSDEENCKPQTCTLKDFLCANGDCVSSRFWCDGD
HEFQCKNNN-CIPDHWRCDSQNDSDNSDEENCKPQTCTLKDFLCANGDCVSSRFWCDGD
DEFRCCKDSGRICIPARWKCDGEDDCGDGSDEPKEE-----CD--

FIG. 5L

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

FDCADGSDERNCTSCSKDQFRCNSGQCIIPAKWKCDGHEDCKYGEDEKSCPEASPTCSSR
FDCADGSDERNCTSCSKDQFRCNSGQCIIPAKWKCDGHEDCKYGEDEKSCPEASPTCSSR
-----ERTCEPYQFRCKNNRCVPGRWQCDYDNDCGDNDSEESCTPRP--CSES

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

EYICASDGCISASLKCNGEYDCADGSDDEMDCVTECKEDQFRCKNKAHCIPIRWLCDSGIHD
EYICASDGCISASLKCNGEYDCADGSDDEMDCVTECKEDQFRCKNKAHCIPIRWLCDSGIHD
EFSCANGRCIAGRWKCDGDHDCADGSDDEKDCCTPRCDMDQFQCK-SGHCIPLRWRCADADAD

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

CVDGSDDEENCERGNI CRADEFLCNNSLCKLHFWVCDGEDDCGDNDSDEAPDMCVKFLCPS
CVDGSDDEENCERGNI CRADEFLCNNSLCKLHFWVCDGEDDCGDNDSDEAPDMCVKFLCPS
CMDGSDDEEACGTGVRTCPLDEFQCNNTLCKPLAWKCDGEDDCGDNSDENPEECARFVCPPP

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

TRPHRCRNNRI CLQSEQMNCNGIDECGDNDSDEHCGGKLTYYKARPCCKDEFACSNKKCIIPM
TRPHRCRNNRI CLQSEQMNCNGIDECGDNDSDEHCGGKLTYYKARPCCKDEFACSNKKCIIPM
NRPFRCKNDRVCLWI GRQCDGTDNCGDGTDEEDCEPPTAHTTHCKDKKEFLCRNQRCLESS

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

DLQCDRLDDCGDGSDEQGCRIAPTEYTCEDNVNPGDDAYCNQIKTSVFCRCCKPGFQNRNM
DLQCDRLDDCGDGSDEQGCRIAPTEYTCEDNVNPGDDAYCNQIKTSVFCRCCKPGFQNRNM
SLRCNMFDDCGDGSDEEDCSIDPKLTSATNASICGDEARCVRTEKAAAYCACRSFGFHTVP

FIG. 5M

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

KNRQCEDLNECLVFGTCSHQINVEGSYKVCVDQNFQERNNTCIAEGSEDQVLYIANDTD
KNRQCEDLNECLVFGTCSHQINVEGSYKVCVDQNFQERNNTCIAEGSEDQVLYIANDTD
GQPGCQDINECLRFGTCSQLCENNTKGGHLCSCARNFMKTHNTCKAEGSEYQVLYIADDNE

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

ILGFIYPFNYSGDHQQISHIEHNSRITGMDVYYQRDMMIISTQFNPGGIFYKRIH-----
ILGFIYPFNYSGDHQQISHIEHNSRITGMDVYYQRDMMIISTQFNPGGIFYKRIH-----
IR-SLFPGHPHSAYEQAQFGDESVRIDAMDVHVKAQGRVYW-TNWHTGTISYRSLPPAAPP

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

---GREKRQANS---LICPEFKRPRDIAVDWVAGNIYWTDHSRMHWFSYTTHWTSRLY
---GREKRQANS---LICPEFKRPRDIAVDWVAGNIYWTDHSRMHWFSYTTHWTSRLY
TTSNRHRRQIDRGVTHLNI SGLKMPRGIAIDWVAGNVYWTDSG-----RD

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

SINVGQLNGPNC'TRLLTNMAGEPYAIAVNPKRGMWYWTVVGDSHSHIEEAAMDGTLRRILV
SINVGQLNGPNC'TRLLTNMAGEPYAIAVNPKRGMWYWTVVGDSHSHIEEAAMDGTLRRILV
VIEVAQMKGENRKTLSGMIDEPHAI VVDPLRGTMYSWSDWGNHHPKIEAAMDGTLRETLV

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

QKNLQRP'TGLAVDYFSERIYWADFELSIIGSVLYDGSNSVSVSSKQGLLHPHRIDIFED
QKNLQRP'TGLAVDYFSERIYWADFELSIIGSVLYDGSNSVSVSSKQGLLHPHRIDIFED
QDNIQWPTGLAVDYHNERLYWADAKLSVIGSIRLNGTDP IVAADSKRGLSHPFSDVFD

FIG. 5N

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

YIYG-AGPKNGVFRVQKFGHGSVEYLALNIDKTGVLISHRYKQLDLPNPCLDLACEFLC
YIYG-AGPKNGVFRVQKFGHGSVEYLALNIDKTGVLISHRYKQLDLPNPCLDLACEFLC
YIYGTYINNRFKIHKFGHSPVLNLTGGLSHASDVVLYHQHKQPEVTNPCDRKKCEWLC

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

LLNPSGATCVCPEGKYLINGTCN-----DDSLDDSKLTCENGGRCILNEKGDRLC
LLNPSGATCVCPEGKYLINGTCN-----DDSLDDSKLTCENGGRCILNEKGDRLC
LLSPSGPVCTCPNGKRLDNGTCVPVPSPTPPDAPRPGTCNLQCFNGGSCFLNARRQPKC

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

HCWPSYSGERCEVNHCSNYCQNGGTCVPSVLGRPTCSALGFTGPNCGKTVCEDFCQNGG
HCWPSYSGERCEVNHCSNYCQNGGTCVPSVLGRPTCSALGFTGPNCGKTVCEDFCQNGG
RCQPRYTGDKCELDQCWEHCRNGGTCAASP SGMPTCRCPGTGTPKCTQQVCAGYCANNS

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

TCIVTAGNQPYCHCQPEYTGDRCCQYVCHHYCVNSECTIGDDGSLECVCPTRYEGPKCE
TCIVTAGNQPYCHCQPEYTGDRCCQYVCHHYCVNSECTIGDDGSXECVCPTRYEGPKCE
TCTVNQGNQPQCRCLPGFLGDRCCQYRQCSGYCENFGTCQMAADGSRQCRCTAYFEGSRCE

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

VDKCVRCHGGHCIINKDSEDFCNCCTNGKIASCCQLCDGYCYNGGTCQLDPETNVPVCLC
VDKCVRCHGGHCIINKDSEDFCNCCTNGKIASCCQLCDGYCYNGGTCQLDPETNVPVCLC
VNKCSRCLGACVVKQSGDVTNCNTDGRVAPSLTLCVGHCSNGGSCTMN-SKMMPECQC

FIG. 50

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

STNWSGTQCERPAPKSSKSDHISTRSAIIVPLVLLVTLITTLVIGLVLCRRRTKTIR
STNWSGTQCERPAPKSSKSDHISTRSAIIVPLVLLVTLITTLVIGLVLCRRRTKTIR
PPHMTGPRCEEHVFSQQQPGHIAS----ILIPLLLLLLLLLVAGVVFVWYKRRVQGAKEFQ

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

RQPIINGGINVEIGNPSYNMYEVDHDHNDGGLLDPGFMIDPTKARYIGGGPSAFKLPHTA
RQPIINGGINVEIGNPSYNMYEVDHDHNDGGLLDPGFMIDPTKARYIGGGPSAFKLPHTA
HQRMTNGAMNVEIGNPTYKMYEGGEPDDVGGLLDADFALDPDK-----P-----

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

PPIYLNSDLKGPLTAGPTNYSNPVYAKLYMDGQNCNRSLSGSDERKELLPKKIEIGIRET
PPIYLNSDLKGPLTAGPTNYSNPVYAKLYMDGQNCNRSLSGSDERKELLPKKIEIGIRET
-----TNFTNPVYATLYMGHGHGRHSLASTDEKRELLGRGPEDEIGDP-----

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

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VA
VA
LA

FIG. 5P

SEQ ID NO: 13
SEQ ID NO: 29
A47799_aal
SEQ ID NO: 31
gi3978171

HRIWVH-----
HRIWVHNCHIGDAFSEEEANRRRFFERYPGQTSNQII
HRIWVHNCHIGDAFSEEEANRRRFFERYPGQTSNQII
HRIWVHNCHIGDAFSEEEANRRRFFERYPGQTSNQII
HRIWVHNCHIGDAFSEEEANRRRFFERYPGQTSNQIV

FIG. 6D